SOUTH DAKOTA INFLUENZA EPIDEMIOLOGY AND LABORATORY SURVEILLANCE, 2012-2013 SEASON

National Influenza Surveillance Data

Influenza-like-illness (ILI) in the United States typically begins to increase in late December or early January and peaks in February most commonly. The 2012-13 influenza season peaked early and was a moderately severe season, with influenza A (H3N2) viruses predominating. Nationally activity peaked in late December, and influenza A (H3N2) viruses were most commonly reported through the week ending February 16, 2013 (week 7). From the week ending February 23, 2013 (week 8), through the end of the season, influenza B viruses were more commonly reported. The majority of all influenza viruses in specimens sent to CDC for further antigenic characterization were similar to the components of the 2012-13 Northern Hemisphere vaccine.

The peak percentage of outpatient visits for ILI (6.1%) was one of the highest reported since the system began in its current format in 1997. The number and rate of influenza-associated hospitalizations among adults aged ≥65 years during the 2013-13 influenza season are the highest since systematic data collection on laboratory-confirmed, influenza-associated hospitalization in adults began in the 2005-06 season. Hospitalization rates for those aged ≥65 were 191 per 100,000 population, two and a half times the highest rate previously reported for this age group. With the exception of the 2009 H1N1 pandemic, the number of influenza-associated pediatric deaths reported to CDC for the 2012-23 season was the highest reported since data collection began in 2004. Reported pneumonia and influenza mortality exceeded the epidemic threshold for 13 consecutive weeks. Based on the percentage of specimens testing positive for influenza, the peak of influenza activity for the 2012-13 season, occurring during the week ending December 29, 2012 (week 52), was similar to the 2003-04 season and was the earliest since the 2009 H1N1 pandemic, when activity peaked during the week ending October 24, 2009 (week 42).

On March 31, 2013, Chinese health authorities reported a novel avian influenza A (H7N9) virus causing human infection. As of June 7, 2013, 132 cases have been confirmed; many of the infected people are reported to have had close contact with poultry. The virus has only been seen in mainland China and Taiwan; no cases have been reported in the United States. Unlike the variant influenza A (H3N2v) virus associated with swine exposure at agriculture fairs in the United States which generally caused mild illness, the avian influenza A (H7N9) virus has caused severe illness in the majority of cases in humans, and approximately 27% of identified cases have been fatal.

Testing for seasonal influenza viruses and monitoring for novel influenza A virus infections should continue year-round, as should specimen submission to CDC for further antigenic and genetic analysis and antiviral resistance monitoring. A total of 308 infections with variant influenza viruses (304 H3N2v viruses, three H1N2v viruses, and one H1N1v virus) were reported from 10 states during the summer and fall of 2012, before the start of the 2012-13 influenza season, and two cases of H3N2v were detected during the 2012-13 season. The H3N2v virus circulated in pigs in 2010 and was first detected in humans in 2012, when 12 cases were identified. Most of these infections occurred in children with prolonged exposure to pigs at agricultural fairs. Limited human-to-human spread of this virus was detected, but no sustained community spread of H2N2v was identified.

However, this increase of H3N2v cases in 2012, and the recent emergence of the novel avian influenza A (H7N9) virus in China, further emphasizes the importance of continuing to monitor for novel influenza A viruses. Although summer influenza activity in the United States typically is low, cases of influenza and even sporadic outbreaks are detected in the United States throughout the summer. Health-care providers should remain vigilant and consider influenza as a potential cause of summer respiratory illnesses. They also should consider novel influenza viruses in persons with ILI and swine exposure, and those with severe acute respiratory infection after travel to China. Public health laboratories should immediately send to CDC virus specimens that they cannot type or subtype using standard methods and submit all specimens that are unusual, including all summer specimens, as soon as possible after identification.

Since 2010, CDC has recommended annual influenza vaccination for all persons aged ≥6 months, preferable in the fall before the U.S. influenza season begins. However, during other times of the year, persons who have not received the vaccination for the current season should be vaccinated before traveling to parts of the world where influenza activity is ongoing. This is particularly important for persons at high risk for influenza-related complications. This recommendation also applies to persons traveling within the temperate regions of the Southern Hemisphere or as part of large tourist groups (e.g., on cruise ships) that might include persons from other parts of the world where influenza activity is ongoing. Persons should also be aware that all Northern Hemisphere influenza vaccine manufactured for the 2012-13 season expires by June 30, 2013, after which influenza vaccines will not be available in the United States until the 2013-14 vaccine is available in the fall.

As a supplement to vaccination, influenza antiviral drugs are an important adjunct to reduce the impact of influenza. Based on recommendations of the Advisory Committee on Immunization Practices, antiviral treatment is recommended as soon as possible for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at higher risk for influenza-related complications. Antiviral treatment also may be considered for outpatients with confirmed or suspected influenza who do not have known risk factors for severe illness if treatment can be initiated within 48 hours of illness onset. In addition, if a clinician does suspect that a patient might have an infection caused by a novel influenza virus; prompt empiric antiviral therapy is recommended. Recommended antiviral medications include oseltamivir and zanamivir. Recent viral surveillance and resistance data indicate that the majority of currently circulating influenza viruses are sensitive to these medications. Amantadine and rimantadine should not be used because of sustained high levels of resistance to these drugs among circulating influenza A viruses.

South Dakota Influenza Epidemiology and Laboratory Surveillance

The South Dakota Department of Health (SD DOH) and South Dakota Public Health Laboratory (SDPHL) conduct surveillance for influenza year-round, and intensifies activities October through May. The components of South Dakota's influenza surveillance program for the 2012-2013 season included 66 laboratory sentinel sites; 21 Influenza Like Illness Network (ILINet) providers); viral culture and PCR testing (SDPHL); DFA testing (Pine Ridge, Rapid City Regional, and Sanford Laboratories); reporting of aggregate rapid antigen results; confirmed influenza, influenza associated hospitalizations and deaths, and institutional outbreaks. During the influenza season,

weekly summary reports are posted on the SD DOH website at: flu.sd.gov.

Table 1 shows a total of 994 confirmed influenza cases, A(H3N2) 384 (39%), A(H1N1) 7 (1%), A-not subtyped 354 (36%) and 249 (25%) influenza B, were reported to SD DOH. Additionally, 46,172 rapid antigen influenza tests were accomplished with 8,371 positive (18%), 5,786 (69%) positive for influenza A and 2,585 (31%) positive for influenza B.

Lab Confirmed Influenza Cases (by DFA, PCR, or culture)			Influenza Associated Hospitalizations		Influenza Associated Deaths
Age Group	# Cases	(%)	# Hosp	(%)	# Deaths
0-4	230	(23%)	64	(18%)	1 (3%)
5-24	211	(21%)	15	(4%)	2 (5%)
25-49	208	(21%)	41	(11%)	0
50-64	123	(12%)	56	(15%)	1 (3%)
> 64	221	(22%)	189	(52%)	34 (89)
Total	993		365		38

Table 1 Age distribution of laboratory confirmed cases of influenza and influenza associated hospitalizations and deaths

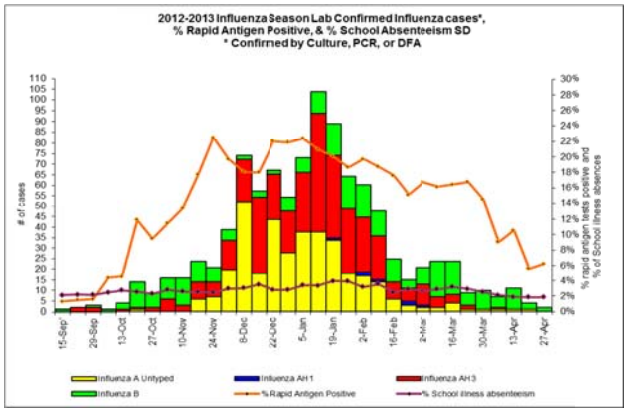

Table 2 Seasonal distribution of influenza by MMWR week

The 2011-2012 influenza viruses had a substantial impact on all age groups. The median age of confirmed influenza cases was 26 years with an age range of 9 months to 101 years.

As indicated in Table 2, the first confirmed case of influenza was reported the second week of September 2012 and the last case reported late May 2013. The predominant virus in South Dakota was influenza A (H3N2); however, the season started and ended with influenza B being the predominant virus. The peak of the season was the second week in January 2013 with AH1N1, AH3N2, and Influenza B viruses circulating.

There were 365 individuals reported hospitalized during the 2012-2013 influenza season. The first hospitalization was identified mid-September 2012 and the last was reported early June 2013. Hospitalizations peaked mid-January. For patients that were hospitalized with influenza, the age range was 2 weeks to 102 years with a median age of 66 years.

Thirty-eight individuals died due to influenza and its complications during the 2012-2013 season. Gender breakdown was 50% male and 50% female. The median age was 88 years, with an age range of 3 weeks to 100 years. 89% of the influenza associated deaths were White and 11% were Native American.

Other viral respiratory pathogen reports included 86 adenovirus, 164 hMPV, 11 parainfluenza-1, 27 parainfluenza-2, 173 parainfluenza-3, 5 parainfluenza-4, and 471 respiratory syncytial virus.